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AUTHOR Galambos, Eva C.
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ABSTRACT

Health care is demanding increasing resources and attention in numbers of health care workers, in levels of skills required, in time spent in training, and in dollars expended. A greater spectrum of skills is required to cope with increasing health care demands, yet trends toward specialization and fracturing of responsibilities assigned to health care personnel often obstruct opportunity for application of the individual's full range of preparation. In the South, college allied health programs have registered a seven-fold increase in graduates and basic registered nursing programs have doubled, but geographical distribution problems prevent easing of worker shortages. To insure the quality of care, there is a trend to lengthen the educational preparation for entry into many allied health fields, yet there is evidence that many workers are overtrained for the task they perform. Lengthened programs can enhance the quality of preparation, but also raise the total cost of health care. In considering the many current proposals for allied health and registered nurse programs at higher degree levels, postsecondary education should distinguish between needs for selective advanced education versus a general lengthening of entry-level preparation. (LRA)

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Implications of Lengthened Health Education:

Nursing and the Allied Health Fields

Eva C. Galambos

Southern Regional Education Board
130 Sixth Street, N.W.
Atlanta, Georgia 30313
1979

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Highlights

- Collegiate allied health programs have registered a seven-fold increase in the number of graduates in the South during the past eight years. Graduates of basic registered nursing programs have more than doubled.

- With an annual addition of 26,000 allied health graduates, and 21,000 registered nurses in the South, urban areas are projected to be well supplied with health workers. However, large numbers alone will probably not solve the geographic distribution problem within states. Strategies for better distribution of available health workers should be much more cost effective than mere expansion of educational programs.

- There has been a gradual trend to lengthen the educational preparation for entry into many allied health fields and into registered nursing. Lengthened programs can enhance the quality of preparation, but also raise the total costs of health care.

- Insuring the quality of care is the most important justification for lengthening the formal education of health care workers. Yet there is evidence that many allied health workers are overtrained for the tasks they perform.

- Licensing and other institutional arrangements provide the health occupations with a degree of control to require higher levels of education as a condition for initial employment. Thus, higher education may become an unwitting partner in promoting educational practices that drive up the costs of health care.

- There are selective needs for health personnel with advanced education to serve in managerial capacities, in specialized areas, as instructors, and in research. However, only a portion of allied health workers and registered nurses will be needed in such roles.

- In considering the many current proposals for allied health and registered nurse programs at higher degree levels, postsecondary education should distinguish between needs for selective advanced education versus a general lengthening of entry-level preparation.

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Foreword

Health care in the South, as elsewhere in the United States, demands a growing part of our resources and our attention — in numbers of health care workers, in levels of skills required, in time spent on training, in dollars expended. The need for more health care facilities mounts with the progressive aging of the population. The cost of health care spirals with the increasing sophistication of health care technique and technology.

This analysis focuses on one of the dilemmas which result from these confusing developments in the health industry: a greater spectrum of skills is required to cope with increasing health care demands, yet trends toward specialization and fracturing of responsibilities assigned to health care personnel often obstruct opportunity for application of the individual's full range of preparation. Thus, expensive training, which remains partially unused, may contribute unnecessarily to the total costs of the health care industry.

Health care educators are called upon to evaluate their programs and curricula in terms of contemporary societal needs, as well as fulfillment of the individual's professional aspirations. By the same token, selection of candidates for admission to programs of health care education must not only be attentive to levels of competency, but must aim for realistic matching of career expectations and actual job opportunities in the various health care occupations.

Winfred L. Godwin
President

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Introduction

Ask any administrator or planner in higher education, "In which field are you receiving the most requests for new programs?" and the answer is likely to be, "Nursing and Allied Health." The requests come from two- and four-year institutions alike. Four-year colleges often propose programs at the baccalaureate level in fields for which two-year institutions also grant associate degrees or certificates. Emerging new occupations and continued health manpower shortages, especially in rural areas, constitute the rationale for program requests by two-year institutions.

The explosion of allied health and nursing education in both the region's and the nation's two- and four-year institutions has been phenomenal, has exceeded the growth of professional education in the health fields, and, if for no other reason than its sheer size, demands analysis in terms of future directions and policies.

In 1975-76, the latest year for which an inventory of *collegiate* allied health programs is available, there were 1,428 programs in the Southern region in the more than 140 varieties of allied health fields, exclusive of registered nursing (Table 1). The number of programs had increased 174 percent since 1967-68, and netted a *seven-fold* increase in the number of graduates produced. In some fields the increase in the number of graduates was relatively modest (for example, a 264 percent increase for dental hygienists). In other fields, especially in those that, in the late 1960s, barely existed (e.g., medical record technicians), growth rates have been radical. For some occupations, however, such as radiologic technologist, the rapid growth of collegiate programs overstates total expansion, since some collegiate programs replaced previously hospital-based programs.

Four-year colleges in the region account for 64 percent of all allied health programs. When only basic, or entry-level, preparation is considered, four-year institutions in the region account for 59 percent of all programs. The bulk of entry-level graduates, however, emanates from two-year programs.

Despite the consolidation of many hospital-based programs into collegiate ones, the number of accredited programs for the 23 occupations under the umbrella of the Committee of Allied Health Education and Accreditation (CAHEA) has also continued to grow in the region. In 1977, there were 813 accredited programs in the region, an increase of 16 percent over the number accredited in 1973. Approximately one-third of these accredited programs are collegiate-based,* and the remainder are hospital-based. In addition to the hospital-based programs accounted for in the CAHEA accreditations, there are many others which would have to be identified and counted for a complete overview of postsecondary programs in allied health education in the region.

The expansion of education in registered nursing in the region has also been tremendous. From 1969-70 to 1976-77, annual graduations in the South rose from 8,800 to 21,500. Some 101,000 registered nurses have been graduated in the region during the last six years, or three-fifths as many as were employed at the beginning of this period (Table 2).

*Thus, those identified in the inventory of collegiate programs are double-counted. Program accreditation or approval for occupations other than the 23 under CAHEA is the responsibility of other organizations.

TABLE 1

Collegiate Programs and Graduates, Selected Allied Health Occupations, SREB Region 1967-68 and 1975-76

	Programs			Graduates		
	Number		Percent Change	Number		Percent Change
	1967-68	1975-76		1967-68	1975-76	
Health Care Administrator, Health Systems Analyst & Long-Term Care Administrator	9	23	155%	115	482	319%
Health Care Assistant Administrator	1	11	1,000	2	110	5,400
Medical Office Assistant, Medical/ Dental Secretary & Unit Clerk	24	56	133	155	743	379
Cytotechnologist	14	17	21	92	106	15
Histologic Technician	2	2	0	7	17	143
Medical Laboratory Assistant & Medical Laboratory Technician	8	74	825	51	963	1,788
Medical Technologist, Chemistry Technologist & Public Health Laboratory Scientist	114	175	54	492	1,771	260
Dental Assistant	14	43	207	146	876	500
Dental Hygienist	20	56	180	343	1,250	264
Dental Technician	5	14	180	21	257	1,123
Emergency Medical Technician	0	38	—	0	3,033	—
Community/Public Health Educator, Health Educator & School Health Educator	30	66	120	159	936	488
Medical Record Administrator	4	17	325	23	176	665
Medical Record Technician	4	18	350	0	184	—
Human Services Technologist/ Technician, Mental Health Associate/ Technician/Assistant, Mental Health Technologist, Mental Retardation Aide & Psychiatric Technician	10	53	430	14	978	6,885
Nuclear Medicine Technologist/ Technician	2	14	600	2	117	5,750
Nurse Aide/Orderly	12	48	300	411	1,901	362
Nurse Anesthetist, Nurse Practitioner & Nurse-Midwife	4	15	275	44	182	313
Operating Room Technician	5	25	400	65	389	498
Physician Assistant-Primary Care & Physician Assistant-Specialty	2	22	1,000	3	485	16,066
Radiation Therapy Technologist/ Technician	0	4	—	0	17	—
Radiologic Technologist/Technician	25	87	248	131	920	602
Occupational Therapist	3	14	366	49	210	328
Occupational Therapy Assistant	0	7	—	0	89	—
Physical Therapist	6	25	316	66	534	709
Physical Therapy Assistant	2	12	500	0	167	—
Respiratory Therapist	2	41	1,950	6	491	8,083
Respiratory Therapy Technician	0	12	—	0	151	—
Rehabilitation Counselor	10	19	90	117	478	308
Audiologist, Speech Pathologist & Speech Pathologist/Audiologist (including Pre-Master's)	59	79	33	281	1,462	420
Total—Selected Occupations†	391	1,087	178	2,795	19,475	596
Total—All Occupations	520	1,428	174	3,205	26,010	711

†Includes 53 occupations out of the total of 147 occupational program varieties.

Source: U.S. Department of Health, Education, and Welfare, Health Resources Administration, *Allied Health Education Programs in Junior and Senior Colleges*, Vols. 1 & 2, 1975.

Yet, in spite of the huge increase in the number of graduates and programs in allied health and registered nursing, colleges and universities continue to submit requests for new programs. Many of the proposals are to provide education at a higher level than was previously the norm, and reflect a trend toward lengthening the educational preparation of allied health and registered nurse personnel.

TABLE 2

Graduates — Registered Nursing, Basic Programs, SREB Region

1969-70 — 1976-77

	Baccalaureate†	Associate	Diploma	Total Region
1969-70				
Number	2,325	2,922	3,578	8,825
Percent of Regional Total	26%	33%	41%	100%
Percent of U.S. Total	26	25	16	20
1972-73				
Number	3,078	6,890	3,294	13,262
Percent of Regional Total	23%	52%	25%	100%
Percent of U.S. Total	24	28	15	23
1976-77				
Number	6,788	11,487	2,663	20,938
Percent of Regional Total	32%	55%	13%	100%
Percent of U.S. Total	29	32	15	27

Total Graduates, Basic RN Programs

	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	Total 6 Years
SREB Region	11,102	13,262	16,660	18,552	20,460	20,938	100,974
United States	51,304	58,881	67,061	73,915	77,065	77,755	405,981

†This does not include baccalaureate degrees earned by registered nurses who had previously earned associate degrees or diplomas.

Source: National League for Nursing, *Nursing Data Book*, New York, 1978, pp. 27-32.

Several circumstances contribute to the continuing popularity and expansion of allied health and nursing education. Shortages persist in many health occupations, especially in rural areas. Many of the health programs detailed in Table 1 have been "on line" only a short time, and thus the annual flow of graduates is of such recent vintage that it has not yet had time to saturate market demand. This situation may soon become quite different, however, now that the region's production of 26,000 allied health graduates and 21,000 registered nurses is a recurring annual event.

Declining enrollments in liberal arts and education make allied health and other vocationally oriented programs an attractive alternative for anxious college administrators who are concerned about how to preserve enrollments. Past availability of federal assistance helped many of these programs to become established but budget constraints have reduced the federal role in financing health manpower education. Allied health and nursing programs accounted for $82.6 million in state support for higher education operations in 1975 in ten Southern states for which data are available. This represented over one-fourth of total state support for health manpower education operating expenditures.[1]

Major Trends Affecting Health Manpower

There are conflicting signals on the future growth rate of employment in the health industry. Projections by the U.S. Bureau of Labor Statistics, which lean heavily on extensions of past growth rates, corroborate the view that there will be continuing expansion. Employment in hospitals and in other health industry categories for 1980-85 is projected to grow at double and triple the rates, respectively, of employment in all industries.[2] For the South, state employment security agency projections show similar trends: the health industry will account for 7.1 percent of total employment by 1985, as compared to 4.9 percent in 1970.[3] The estimates foresee a 43 percent increase in health manpower employment versus a general increase in employment of 18 percent for all industries. These projections, also based largely on extension of past trends, are favorably viewed by educators in allied health programs in higher education.

A countervailing trend is the current national policy preoccupation over the rising share which health expenditures constitute of gross national product (GNP). In 20 years, from 1955, the health care industry has risen from a 4.6 percent share of GNP to 8.3 percent.[4] Today's congressional and federal and state agency deliberations center on cost containment of the health industry. Certificates of need, lids on hospital expenditures, Professional Standards Review Organizations to monitor excessive delivery of health care services, and the end of capitation grants all contribute to slowing down the health care juggernaut instead of allowing further expansion. Since personnel costs consume approximately two-thirds of health care expenditures, containment of the industry as a whole would certainly slow the demands for health manpower.

In years past it was almost a foregone conclusion in health manpower planning that enactment of some type of national health insurance would occur and immediately result in a burst of demand for additional health care workers. In today's climate of fiscal restraint these assumptions are more "iffy." In 1976, the National Commission for Manpower Policy cautioned that in advance of any form of national health insurance there would first have to be "centralized resource allocation, effectively restraining the growth of the health sector."[5]

Although cost containment policies may have some impact on holding down the growing share of GNP applied to the health industry, the rising average age of the population in the United States will work in the opposite direction. An increase in the share of income devoted to health care expenditures because of the changing age composition would be less of a problem if *real* average family income were to increase in future years, rather than to remain constant.

The direction in which the internal structure of health industry manpower is moving will affect the overall demand for allied health and nursing personnel. For example, the ratio of such personnel to physicians has increased tremendously. From 1955 to 1965 the number of active physicians increased by 22 percent, but professional nurses in practice rose by 44 percent, registered X-ray technicians by 56 percent, and clinical laboratory personnel by 73 percent.[6] More recent data on regional employment of health technologists and technicians and of health service workers shows employment of these support personnel expanding more

rapidly than for professional health practitioners, a trend that is projected to continue to 1985 (see Table 3). The data on registered nurses, however, shows them declining relative to physicians, with a ratio of 2.69 per physician in 1970 versus 2.07 in 1985.

Some of the expansion of allied health personnel in recent years was caused by the explosion of technology in medical care which generated the need for new occupations to operate new equipment. Dialysis is an example of a new technique involving complex equipment which required technically trained persons to administer treatment via new equipment. Some technology may have the opposite effect; machines now perform an assortment of laboratory tests that were once run manually by technologists.

Another reason for the rapid expansion of allied health and nursing personnel in years past was the shortage of physicians and other health professionals. Educational programs for physicians' assistants, nurse practitioners, and dental auxiliaries, for example, were promoted largely for the purpose of supplying health manpower to extend the limited availability of physicians and dentists in an era of professional manpower scarcity.

The period of extreme scarcity of physicians is now expected to be behind us, especially in urban areas. Indeed, there is some concern that, as the vastly expanded flow of medical school graduates enters the market, a surplus of physicians may develop by the 1980s. From the days of the guilds, the response of any established profession to impending surpluses has been to erect stronger restrictions against trespass into its area of practice. In modern society, licensing laws and other institutional arrangements are vehicles through which "turf" is controlled. The current widespread dispute between ophthalmologists and optometrists about the use of medication by the latter group is a clear signal of territorial protection as

TABLE 3

Ratios of Selected Health Personnel to Health Practitioners, SREB Region

	1970	1974	1985
Health Technologists & Technicians to Practitioners	.48:1	.54:1	.61:1
Health Service Workers to Practitioners	2.45:1	2.59:1	2.95:1
Registered Nurses to Physicians & Osteopaths	2.69:1	2.39:1	2.07:1

Definitions: Occupations included in the above categories are as follows:

Health Technologists & Technicians: Clinical Laboratory Technologists & Technicians, Dental Hygienists, Health Record Technologists & Technicians, Radiologic Technologists & Technicians, Therapy Assistants, Other Health Technologists & Technicians.

Health Service Workers: Dental Assistants, Health Aides, except Nurses, Health Trainees, Lay Midwives, Nurses' Aides, Orderlies.

Practitioners: Chiropractors, Dentists, Dietitians, Optometrists, Pharmacists, Physicians & Osteopaths, Veterinarians, Other Professional Medical & Health Workers.

Source: Compiled from 1977 reports on occupational employment projections by each Employment Security Agency in the SREB states.

supply saturates the market. Battles about what constitutes the practice of medicine, as nurse practitioners establish themselves in independent settings, will become more heated as the oversupply of physicians in metropolitan areas increases the relative attraction of the less urban areas.

It is ironic that the supply of physicians' assistants, a mere trickle in the 1960s when it was sorely needed, is developing into a steady flow at a time when the availability of physicians is expanding rapidly. Similarly, a new clinical, patient-oriented role to assist physicians in drug administration is being sought for pharmacists at a time when physicians will be less open toward sharing any area of practice.

The economic logic that it may be cost-effective to use nurse practitioners and physicians' assistants instead of physicians in performing certain tasks may not be enough to overcome the reality of who holds the highest cards in a competitive struggle, and who arrived first.

The Retention Problem

Another factor that will affect the degree to which the market will absorb the annual stream of graduates in the allied health fields and nursing is the retention of these graduates in the fields for which they were trained. Women continue to predominate in the allied health and nursing fields, and for them marriage and child-rearing may result in both temporary and permanent withdrawal from the labor force. This factor helps to explain why, in spite of the tremendous increase in the number of graduates in the health fields, shortages persist.

A 1970 study of what had happened to registered and practical nurses five years after their graduation showed that almost one-third were no longer working in nursing. The attrition was higher for married than for single nurses.[7] More recent data indicate that approximately 70 percent of the nation's registered nurses are actually employed full- or part-time as nurses. Other professions in the health fields, such as medical technology, have similar concerns about retaining personnel, especially in view of the high costs of education in the health occupations.

The continuing general trend toward greater labor force participation by women, regardless of their marital status, may increase future retention of allied health and nursing personnel. Higher labor force participation was found for registered nurses in 1972 than in 1962.[8] As the large annual flow of new graduates increases the competitiveness among health workers for jobs, their nomadic tendencies might be reduced. In some metropolitan areas that are becoming saturated with medical technologists there are already signs of less job switching among these workers.

Supply Projections

Definitive statistical projections of supply and demand in specific allied health occupations in the region are currently not possible. Except for occupations where licensing is required, hard data do not even exist on the current number of persons employed. Neither the memberships in the professional associations that represent various allied health occupations nor the number of certified or registered workers represent the total supply of health workers. Both exclude proportions of those working, varying from 20 to 80 percent, depending on the occupation. The weaker the requirement for credentials and the centralization of control over the profession, the larger the unaccounted-for percentage will be.

However, some conclusions about the adequacy of current production levels in allied health education are evident from estimates developed by the Bureau of Health Resources Development. In Table 4, the number of formally trained available persons is shown for 1970, with estimates of the corresponding numbers who will be available in 1990.* Phenomenal increases are projected for the nation in the 1990 supply of available formally trained workers in each occupation. Indeed, a doubled supply for any occupation is a conservative outcome in HEW projections. For registered nurses, projections of the active supply in 1990 range from 1,467,000 to 1,541,000, an increase of 62 to 70 percent over 1976, depending on the data used.[9]

TABLE 4

Estimates of Formally Trained Active Personnel in Selected Allied Health Occupations, United States, 1970 and 1990 (Projected)

	Formally Trained Active Personnel			
	1970		1990 Projected	
	Number	Percentage of Total Employed	Number	Percentage Increase 1970-1990
Dietitians	15,300	53%	22,340	46%
Medical Record Administrators	4,200	38	6,430	53
Medical Technologists	45,000	69	123,520	174
Occupational Therapists	7,300	66	16,880	131
Physical Therapists	11,550	77	36,570	217
Cytotechnologists	2,400	74	7,400	208
Dental Assistants	9,200	8	71,530	678
Dental Hygienists	15,100	100	57,650	282
Dental Technicians	1,600	5	14,290	793
Respiratory Therapists	3,850	35	18,810	389
Medical Record Technicians	3,800	9	6,460	70
Occupational Therapy Assistants	600	25	8,820	1,370
Radiologic Technicians	41,000	55	161,280	293
Speech Pathologists & Audiologists	13,300	70	70,930†	433
Certified Laboratory Assistants	6,700	††	41,160	514

†Represents only those at master's level.

††The Health Resources Administration has no estimate. In a 1972 survey of allied health personnel, 19 percent of the laboratory assistants had formal credentials. Harold M. Goldstein and Morris A. Horowitz, *Entry-Level Health Occupations*, Johns Hopkins University Press, Baltimore, Md., 1977, p. 54.

Source: U.S. Department of Health, Education, and Welfare, Bureau of Health Resources Development, *The Supply of Health Manpower*, Government Printing Office, Washington, D.C., 1974, pp. 144-151.

*The projections are based on the number of annual completions from 1970 to 1990, and on the annual separation rates. The separations are based on average sex- and age-specific separation rates from the entire labor force, on the assumption that these are the same for allied health workers.

The supply of manpower in these fields in the region in 1990 should almost follow the nationa' pattern of expansion. The South's share of graduates in allied health programs in 1975-76 was still slightly below its share of the population. The region's share of the available formally trained health workers in 1970 may also have been somewhat lower relative to population. Still, the projected increases in formally trained allied health workers (who may very well be the only ones eligible for employment if the necessity for credentials follows present trends) are so great that it is hard to foresee continuing shortages in the health fields. Moreover, the most recently available data on annual graduations yield a much higher number of annual graduates than what was used to construct the supply estimates in Table 4.

The projections of vastly expanded allied health manpower by 1990 are small comfort today to hardpressed hospital administrators who cannot find enough workers. If the present production of health workers continues, and if some way could be found to obtain better geographical distribution of these workers, these shortages should vanish. With a recurring addition of the present annual flow in the region of 26,000 allied health graduates and 21,000 registered nurses, the urban areas will become saturated with health personnel. Whether an oversupply of health workers in urban areas will result in mobility of the surplus to rural areas is still a puzzle. Large numbers alone will probably not solve the distribution problem. Solution of the most persistent shortage insofar as hospitals are concerned, i.e., of registered nurses in rural areas, will depend on strategies that address the distribution issue directly rather than on continued expansion of educational programs.

Lengthened Entry-Level Education in the Allied Health and Nursing Fields

Of all the forces that affect the supply of allied health manpower, lengthening of the formal preparation for entry into many health fields may be the most important factor for higher education. Lengthening the formal preparation for entry into any occupation has two direct effects on higher education: it raises the cost of the educational program — since it costs more to educate a person four rather than two years — and it strengthens total enrollments. From a public policy standpoint of cost containment in higher education and the health care industry, lengthened preparation is a problem. From an institutional perspective of maintaining enrollments, the longer preparation is obviously welcome. From the viewpoint of those already trained and employed, lengthening the preparation makes it more difficult for others to gain entry, and thus lessens competition.

Extending the period of education is not, of course, a phenomenon unique to the health fields. A cursory glance at the rising proportion of master's degrees, as compared to baccalaureate awards, across all professions shows that lengthened education is the norm. Business administration and education are striking examples of this trend.

There are special considerations, however, in lengthening the preparation for entry into allied health and registered nursing as compared to other disciplines. Via the route of regulation, the health industry is in a stronger position to enforce the requirement of higher credentials than is true in most other industries. Where licensing, or certification by professional associations, is a prerequisite for employment because hospital accreditation, laboratory approval, or Medicare and Medicaid reimbursements depend on these standards, pressures for extending educational preparation result in mandatory credentials in the health industry, rather than the optional routes available in other industries. Higher education, as it accedes to pressure for lengthened education, may become an unwitting partner with the professional associations in policies that curtail the supply of health manpower and raise its costs.

The traditional emphasis on career preparation of the allied health and nursing programs represents another difference between these fields and other higher education disciplines. The current effort to include a general curriculum as allied health and nursing programs move toward baccalaureate levels, tends to lengthen the educational program. Ironically, the health programs are now victims of their own past vocationalism as they seek to overcome resistance to extending and broadening the content of their curriculum.

The Trend Toward Longer Preparation

Longer preparation for entry into the health fields is not a sudden occurrence. Indeed, if taken from the beginning when on-the-job training was the norm for the vast majority, the process has been proceeding steadily since the early 1940s. With rapidly growing demand for

allied health workers, on-the-job training was no longer practical. Moreover, hospital-based programs in many fields were phased out, since the cost of educating allied health manpower could be spread over a wider base in publicly funded higher education than within the health care industry. Medical technology is among the oldest allied health occupations, and standards which included formal education in this field were developed in the early 1930s.

With ever-increasing technology, the number of specialized allied health occupations continues to proliferate and, some experts would add, to fragment. During the 1960s, concurrent with the explosion of two-year community colleges and technical institutes, certificate and associate degree programs sprouted overnight to meet the demand for allied health personnel. The expansion of allied health programs at the associate degree level has by no means come to an end. Indeed, the development of new specialties, such as extra-corporeal technology and sonography, are the current focus of requests for new programs in community colleges.

But, added to the requests for more associate degree programs, is the current pressure to develop baccalaureate programs for what were once associate ones, and postgraduate offerings in fields which were previously at the baccalaureate level.

Stretch-out of formal entry-level education in the health fields occurs in response to various pressures. Exhibit A summarizes the evidence on what has happened to the length of training in accredited programs in selected allied health fields. Formal changes in accreditation requirements, the most direct method of extending program lengths, are highlighted in column 2. Actually, recent *formal* changes in accreditation requirements are fairly limited. Upward revisions of the standards for medical record technicians and respiratory therapy technicians are examples. The accreditation review committee for cytotechnology is now considering a change to the baccalaureate level from the three-year program that leads to an associate degree.

The more usual route whereby preparation becomes longer is through individual programs exceeding the minimum accreditation standards. The extension may occur through increasing the prerequisites for admission, through lenthening the actual program beyond the mandated minimum, or by a combination of these two approaches. The changes that are summarized in column 3 of Exhibit A were developed from the individual descriptions of accredited programs in 1977 and in earlier years. The total educational length was computed by adding the time involved in prerequisites for admission to a program plus the time specified for the program itself. A definite trend in the lengthening of formal education since the late 1960s is evident from the data summarized in column 3. There has been an increase in the percentage of programs that require longer formal education. Medical laboratory technology and dental hygiene are examples of fields in which the total time to complete the accredited programs has shifted upward.

The gradual movement of programs toward longer preparation is often a response to the development of new specialties within occupations. Programs for radiation therapy technicians, which developed from the older field of radiologic technology, generally require prior completion of radiologic technology training, so that the minimum requirement for radiation therapy becomes an addition to the prior preparation in the parent field. The pattern was similar for specialists in blood bank technology.

Total formal education also becomes longer if programs tend to admit students with prior college experience, even in the absence of formal prior education requirements for admission to these programs. Dental technology and assistantship are examples of this trend.

Summary Exhibit A

	Formal Changes in Accreditation Essentials	Actual Changes in Length of Programs Reported, 1969-1977	Present Ferment and Comments
Physician's Assistant	None since adopted in 1971.	Higher percentage now require previous formal education than in 1973.	The demand for this program is very strong, and most applicants have a baccalaureate. So, in effect, 2-year training program is on top of prior 4-year formal education.
Respiratory Therapist	In 1972, a split was made to require a 2-year program for therapists. In 1967, inhalation therapists required 18 months. In 1962, the requirement was 9 months.	Proportion of programs leading to B.S. increased from 4% to 14% in 8 years.	The profession has had some discussion about a B.S. as the basic education, but at the present time there is no definite move in this direction. Demand is strong, and many applicants have several years of college.
Respiratory Therapy Technician	First Essentials adopted in 1972 as a 1-year program.	94% of 1977 programs were 1-year programs; 6%, 12-24 months.	
Medical Record Administrator	In 1970, all programs were required to lead to a baccalaureate or to be post-baccalaureate.	In 1969, 27% of programs required less than 4 years of college; in 1977, only 5%.	There is a formal committee in the AMRA studying the possibility of the master's level for this occupation. No formal decisions as to whether the master's would be for entry level, or for specialized or education routes.
Medical Record Technician	In 1975, standards were revised from a 9-month program to the present requirement of a 2-year associate degree program.	In 1969, 29% of the programs required 24 months; in 1977, 83%.	Medical Record Technicians are not allowed to take the MRA exam to become MRAs, even after a sufficient number of years of experience; they must have a baccalaureate to stand for exam.
Medical Technologist	The prior prerequisite of 2 years of college was changed in 1962 to 3 years of college plus 12 months of training.	A slight change in formal requirements: in 1969, 11% of programs added up to more than 4 years of college; in 1977, 15%.	There are more applicants with baccalaureates entering these programs than was true in former years, which is adding some pressure to go to master's programs. But ASCP is firm on maintaining the baccalaureate as the requirement.
Medical Laboratory Technician (Certificate & Associate Degree)	In 1971, Certified Laboratory Assistant was changed to Medical Laboratory Technician, going from a 1-year to a 2-year program. In 1977, the Medical Laboratory Technician was divided into the Certificate and Associate Degree levels, with 1- and 2-year requirements respectively.	In 1969, 80% of all CLA programs were of 12 months or less duration. In 1977, for all Technicians at both levels combined, 54% of the programs were of 12 months or less, 29% were 24 months or more.	In 1980 ASCP will stop certifying Certificate MLTs. This means the 1-year programs will probably have to change to 2-year programs, if their graduates want to be certified.
Cytotechnologist	None since adoption of first Essentials in 1967.	Since 1969, the percentage of programs requiring more than the standard 2 years of college plus 12 months has doubled to 9%. Also the percentage of programs requiring less than the standard format has decreased from 19% to 3%.	Revision of Essentials is now underway. Serious consideration is being given to making this a baccalaureate program. Many applicants have a baccalaureate.

	Formal Changes in Accreditation Essentials	Actual Changes in Length of Programs Reported, 1969-1977	Present Ferment and Comments
Histologic Technician	No change in first Essentials which were adopted in 1970; 12 months post-high school is standard program length.	12.5% of 1977 programs require 21-24 months instead of the 12- month minimum.	No immediate possibility of moving to the B.S. level, although the subject was raised.
Specialist in Blood Bank Technology	No change since first Essentials were adopted in 1977.	Of 60 programs, 4 are longer than the minimum 12 months, with the prerequisite of MT or B.S.	Prior to 1960, registry exam was open to MTs with 5 years of experience in blood banking; now formal training is required.
Radiologic Technologist (Radiographer)	No change since 1960, when 2-year program was instituted.	There is a slight increase in the percentage of programs that are longer than the standard 24 months or lead to a B.S. degree.	Lengthening of preparation has occurred as specialized fields break off for which training is added on top of the basic RT program. See Radiation Therapy Technician and Nuclear Medicine Technologist.
Radiation Therapy Technician	First Essentials in 1976: a 2-year program for high school graduates, and a 1-year program for RTs, RNs or equivalent formal education in sciences.	Of 84 programs, only 19 are described with length and prerequisites for the high school graduate. The rest are for persons who already have RT, RN, or B.S. degree.	Most programs produce a cumulative total of at least 3 years of formal training: 2 years, at a minimum, to become an RT or RN or obtain equivalent college credits, plus 1 year in radiation therapy formal training.
Nuclear Medicine Technologist	First Essentials developed in 1969, revised in 1976, to remove the distinction between technologist and technician. When there were two levels, the technologist level was at the baccalaureate and the technician at the associate degree level. Now the combined "Essentials" are indefinite: the minimum requirement is a high school diploma plus courses in a number of sciences. MTs, RTs and RNs are presumed to have the basic science requirements. "Institutions offering Nuclear Medicine Technology may provide an integrated program leading to an associate or baccalaureate degree."	Analysis of prerequisites and length of program descriptions shows that only 16% of the programs require a total of no more than 24 months of post-high school formal training, while 79% require the equivalent of 3 years.	
Sonographer	New Essentials are now in developmental stage.		
Medical Assistant	First Essentials, adopted approximately 1969, required a 2-year program to the associate degree. In 1977, Essentials were changed to include a certificate program (1-year) which is and was prevalent in the proprietary schools.	In 1977, 27% of the programs are of at least 24 months duration and only 56% of the programs are no longer than 12 months.	This is one occupation in which official accreditation has been extended to programs with shorter rather than longer duration.
Medical Assistant in Pediatrics	First Essentials adopted in 1971. There are only 2 accredited programs; both lead to an associate degree.		
Medical Assistant in Ophthalmology	First Essentials adopted in 1975, but in 1977, there was still no accredited program. The length of training is indeterminate, from 1 to 4 years.		
Operating Room Technician	First Essentials adopted in 1972. The 1 academic year (9 months minimum) requirement has not been changed.	Of 58 programs, only 3% require longer than the standard 1 year. These exceptions require 2 years.	

	Formal Changes in Accreditation Essentials	Actual Changes in Length of Programs Reported, 1969-1977	Present Ferment and Comments
Physical Therapist	The current Essentials used by CAHEA were adopted in 1977. The length of the program is 4 years, leading to a certificate or master's degree. There has been no change in the length of the program since the previous date of the Essentials (1955).	Program descriptions show no increase in the percent leading to postgraduate degree. However, degree data show a higher proportion of graduates at the master's level in 1975-76 than in 1968-69. This does not include post-graduate certificates that are not counted as "degrees."	There is definite consideration to making the post-baccalaureate level the entry level.
Physical Therapist Assistant	Programs did not exist prior to 1967. Present requirement of associate degree has remained constant since 1967.		
Occupational Therapist	The current Essentials were approved in 1973, and did not change the length of the program. The program leads either to a baccalaureate after 4 years of college, or a post-baccalaureate certificate or master's.	Comparison of the programs shows no marked evidence of a movement to longer preparation. However, degree data show a higher proportion of graduates at the master's level in 1975-76 than in 1968-69. This does not account for the post-graduate certificates not included under "degrees."	There is active consideration being given to the possibility of the master's level being the entry level. Will be voted on at spring 1979 meeting.
Occupational Therapy Assistant	First Essentials adopted in 1975 for certificate and associate degree. No time frame indicated except that it should be "sufficient." Programs are "approved" and not "accredited" by AOTA.	In 1973, 44% of the programs were at the certificate level, generally requiring 1 year. In 1978-79, 80% of the programs are at the associate degree level, generally requiring 2 years.	A certified OT Assistant who has met certain work requirements may now take the exam to become a certified OT without having completed the baccalaureate program. At the spring 1979 meeting, the Association will consider removing this entry possibility.
Dental Hygienist	The official requirement for a 2-year program has not changed.	The length of the program has not changed, but the individual programs have increased their prerequisites: in 1967, only 21% of the programs had prerequisites exceeding high school graduation; in 1977, 35%.	The average preparation of students exceeds the minimum preparation required by individual schools. In 1977-78, while 65% of the programs required no more than high school preparation, only 23% of the programs enrolled students with this level of education. In 35% of the programs, the average level of preparation for students was 2 years of college before admission.
Dental Laboratory Technician	There has been no change in the 1967 standards requiring 2 academic years or 18 consecutive months.	There has been a slight increase of programs into the upper range within the span of 18 months to 2 years.	Since 40% of the students have had at least 1 year of college prior to admission, the total length of education is a minimum of 3 years for a major portion.
Dental Assistant	There has been no change in the minimum requirement of 1 academic year.	There has been a definite trend among programs for a longer training period. In 1967, none extended into 2 years; in 1977, 17% of the programs were for at least 2 years of training.	Since 23% of the students have had at least 1 year of college prior to admission, the total length of education is a minimum of 3 years for approximately one-fourth of the students.
Electroencephalographic Technologist	There has been no change in the minimum requirement of 1 year post-high school.	Over half of the programs exceed the 12-month minimum requirement.	The one existing accredited *Technician* program is 6 months *after* 1 year of college, so in effect this is longer than the total minimum.

Sources: Committee on Allied Health Education and Accreditation, *Allied Health Directory*, 1st — 7th Editions; American Dental Association, *Applicant Analysis/First Year Enrollment, Dental Hygiene, Dental Technology and Dental Assisting*, 1967-68 and 1977-78; American Occupational Therapy Association, *Educational Programs in Occupational Therapy, 1978-79*, and *The Roles and Functions of Occupational Therapy Personnel*, 1973, p. 27.

Another lever that lengthens educational preparation is exerted as professional associations change their standards for certification or obtain changes in licensing laws. Current moves in this area are shown in the last column of Exhibit A. Physical therapy and occupational therapy are examples of fields where the professional associations are now considering whether the master's degree rather than the baccalaureate should become the minimum for certification. The same possibility has been raised in medical record administration.

In effect, longer formal education may also be mandated when the "prior experience" route for upward mobility in an occupation is eliminated in favor of formal education as a prerequisite for certification or registration. For example, at one time a medical technologist with a given number of years of experience in blood banking could stand for the exam to become a registered specialist in blood bank technology. Now formal education is mandatory. In the past, an occupational therapy *assistant*, after supervised experience, has been eligible to stand for the exam of registered occupational *therapist*. A resolution to eliminate this route is to be voted on at the 1979 meeting of occupational therapists. In respiratory therapy, the doors to upward mobility were pulled ajar in 1978. A certified respiratory therapy technician may now stand for examination to become a registered therapist if he or she has completed 62 semester credit hours in the basic sciences. Since to become a certified respiratory technician an individual had to complete a one-year program, the additional requirement of 62 semester credit hours in basic sciences (which are not always a part of the technician one-year program), results in three years of formal education for persons taking this route toward entry into the respiratory therapy occupation. The direct entry route, however, requires only a minimum of two years in a respiratory therapist program.

Pharmacy is a professional health field in which movement to a higher degree (the Pharm. D. instead of the traditional baccalaureate degree) has developed because of underutilization of persons trained at the current level. As the dispensing of drugs has become more routine, pharmacists have sought a more clinical direction which they hope will give the profession an expanded role in administering drugs, with physicians. The Pharm. D program, which requires at least one additional year over the traditional approach, has developed rapidly, with 27 schools now offering the program. (Four schools offer it as the only entry-level program.) After heated debate, the American Association of the Schools of Pharmacy voted in 1978 to continue to recognize both the baccalaureate and Pharm. D. degrees at the entry level.

No move by a professional association to increase the formal educational requirement for entry has attracted more attention than the 1978 resolution of the American Nurses' Association that by 1985 the baccalaureate degree shall become the minimum for entry into "professional" registered nursing. Preparation at the associate degree level would be retained for "technical" nursing. The difference in competencies between the "professional" and "technical" levels has, as yet, not been defined. Although the percentage of nursing graduates with a baccalaureate degree has been steadily increasing (see Table 2), only 32 percent of the 1976-77 registered nursing graduates in the region had this level of training. (This percentage is slightly higher than for the United States as a whole.)

The "Quality" Issue

Many reasons are presented to justify lengthened education for entry into allied health and registered nursing. The most important consideration is the critical aspect of maintaining quality where human life may be at stake. This reason gains universal acceptance when it is

translated into a requirement for additional formal education for a specialist in blood banking, or for an anesthetist assistant. Yet, eventually, questions are raised in some health fields about the relevancy of longer preparation relative to the work to be done.

From a public policy viewpoint there are two countervailing pressures: the need to insure the highest level of quality (i.e., through more and more formal education for health care personnel) versus cost containment, which translates into the employment of persons with less training. The federal government's own policies reflect this conflict. Standards to be met for Medicare and Medicaid reimbursement suggest credentialed personnel and longer formal training. Yet, HEW actions to facilitate advancement of allied health personnel via proficiency tests rather than formal education and Federal Trade Commission interest in removing barriers to the supply of health care personnel point in the opposite direction.

Careful job analysis research has sometimes revealed an amazing amount of overlap in the kinds of tasks that are performed by health personnel in different job classifications with varying levels of education. The inference of such overlaps is that if lower level personnel are performing many of the tasks that are also performed by persons with more training, there is a question about the extent to which the higher level of training is needed. The Goldstein-Horowitz study of functions performed by medical laboratory technicians and technologists in Boston hospitals in the late 1960s showed an amazing amount of overlap in what the two levels of workers were actually doing, although technologists are typically college graduates while technicians are not. Similarly, licensed practical nurses were found to perform much the same tasks as the nurses' aides, although the former had usually completed at least 15 months of formal training as compared to the on-the-job training of the aides.[10]

A recent review of procedures in medical laboratories found that over 90 percent of the tests that were run were routine and not difficult according to a scale developed by experts. The necessary instruction time to teach *technicians* to perform this predominant proportion of the workload was equal to the time needed to teach *technologists* to perform the less than 10 percent of all tests which were deemed difficult and infrequent.[11]

Earlier work in the Boston studies also revealed overlap of some functions which were performed by both physicians and registered nurses.[12] Some overlap is to be expected in any work setting where various types of workers are providing patient care, and need not be interpreted as a signal of overtraining for the higher level occupation when the overlapping function is an occasional occurrence.

A University of California study of nursing occupations in 1970 concluded that 60 percent of the tasks were done by all categories of nursing workers: aides, practical nurses, and registered nurses. Additionally, in some areas, the tasks that had been assumed as appropriate for the various levels of nursing personnel by the project's advisory committee of nursing educators did not match the actual practice of who was doing what.[13]

A detailed analysis of tasks performed by various levels of enlisted medical personnel in the Navy was undertaken in the early 1970s. The conclusion reached in that study was that there was a tremendous amount of overlap in the tasks performed by both higher and lower rated corpsmen, and that many of the tasks could be assigned to those with less training.[14]

Requests for baccalaureate level programs in nuclear medicine technology, a field in which programs exist both at that and at the associate degree level, prompted the Texas Coordinating Board to survey technologists working in this field in Texas. The vast majority had been

trained at the associate degree or certificate level. Among the few who had earned the baccalaureate, most indicated that lower level preparation would have been more appropriate. Some even suggested that on-the-job training might have sufficed.[15] The Coordinating Board concluded that there is no need for additional baccalaureate level programs in this field.

Longer preparation may be justified on the basis of broadening the variety of tasks that graduates will be competent to handle. The current debate about the appropriate level of training for extra-corporeal technicians or technologists illustrates the issue. Should the training be highly specialized (e.g., kidney dialysis) or should it be broad enough to include other procedures, such as heart-lung machines and maintenance of organs for transplants? An intensive four-week program in Minneapolis trains specialized dialysis technicians. The Ohio State University and University of South Carolina baccalaureate programs produce graduates with more versatility. Jobs that encompass more variety are thought to be more satisfying and to offer more career challenge. On the other hand, persons can be trained more quickly to perform in limited areas. In large hospitals there is usually sufficient demand for any one allied health specialty to justify a division rather than a clustering of tasks, which encourages the training of fragmented personnel.* This debate illustrates different perspectives — educational institutions may take the broader view that reflects human fulfillment potentials, while employers seek to get a job done as quickly and cheaply as possible, regardless of the intangible effects which fragmentation may have on patient care.

The Issue in Nursing

Much soul searching has occurred in the nursing profession to define the differences in roles for the various levels of nurses that are trained at the entry level in associate, diploma, and baccalaureate programs. The criteria developed by the Surgeon General's Consultant Group on Nursing in 1962 specify that the baccalaureate degree is the appropriate level for head nurses, team nurses, public health and school nurses, occupational health nurses at staff level, and directors of nursing service in "skilled care" nursing homes. When the Nursing Analysis and Planning Project at the Western Interstate Commission for Higher Education (WICHE) applied these criteria to the 1972 distribution of employed nurses, they determined that 31 percent of these nurses should be at the baccalaureate level, instead of the 14 percent that had actually earned this degree.[16] While this finding indicates that the proportion of baccalaureate nurses was certainly insufficient to meet the criteria, it does not explain why all "professional" registered nurses after 1985 should be at this level of training, as suggested by the American Nurses' Association. The current 32 percent that baccalaureates represent of the region's annual production of registered nurses will gradually translate into an equivalent proportion of the employed nurses to meet the criteria described above. (If the past is any guide, however, by then the criteria will probably have been raised.)

The SREB Nursing Curriculum Project task group in 1976 developed a taxonomy of appropriate competencies for registered nurses from the associate degree through doctoral levels. For example, under "conceptual competencies," nurses at all levels would be expected to recognize cues from behavioral events and situations that are "common and well-defined."[17] But only nurses from the baccalaureate level upward would be expected to recognize cues

*Small hospitals prefer generalists, since these institutions do not have enough work to keep various highly specialized individuals busy. Ironically, generalists with longer training may be more reluctant to work in small, rural hospitals.

requiring "a larger knowledge base." The Nursing Curriculum Project developed a model which shows associate and diploma nurses entering as staff workers to care for clients with common, well-defined illnesses, under the supervision of baccalaureate nurses. The scope of the project did not include an analysis of the proportions of registered nurses at various educational levels who would be required in actual practice.

Administrators of hospitals, where two-thirds of all nurses are employed, generally disclaim any great differences between the three levels of nurses. A 1976 survey of administrators of hospitals and skilled nursing care homes in Kansas, which sought appraisals of nurses' performance by their levels of training, revealed no differences between baccalaureate and diploma nurses in large hospitals. Diploma nurses were actually rated highest in the small hospitals. The associate degree nurses were given the lowest rankings by both classes of hospital administrators. However, a substantial portion of the larger hospitals replied that higher levels of education are an important consideration in the advancement of nurses.[18] The smaller hospitals gave the highest ratings to diploma nurses because they were deemed most capable immediately upon being employed. This is important for small hospitals that cannot afford training programs. There was general agreement that, with experience, the performance differences between nurses by level of preparation tend to vanish.

In some settings, such as public health agencies and schools, which in 1972 accounted for seven percent of all employed nurses, a bachelor's degree is the usual prerequisite for registered nurses. Some states are having difficulty in finding a sufficient number of baccalaureate nurses to fill public health positions.

Distinguishing Occupational Roles and Corresponding Educational Content

Although scattered evidence from task analysis and other studies points in the direction of overtraining in various health fields, these studies have not stemmed the tide toward longer formal training for entry into the allied health fields. Professional personnel tend to question the techniques of task analysis. A frequent criticism has been that tasks as described in the analyses do not reflect different degrees of performance or judgment involved when done by various levels of personnel. The same physical tasks performed by personnel with different levels of training may well represent different degrees of provider-patient interactions, which are hard to measure in task or function analysis studies.

The Bureau of Health Manpower of HEW recently promoted proficiency examinations which would allow persons with lower levels of training to move into higher occupations. This effort spawned a series of "role delineation" studies. The purpose of these studies was first to determine the proper roles and functions for various levels of an occupation, and then to design competency examinations to facilitate credentialing of personnel, regardless of their formal preparation. However, in some of these studies the roles were assigned to various levels *not* on the basis of what persons in the field are actually doing, but on the basis of preconceived professional decisions as to what the various roles should be for effective practice. A role delineation study conducted by a profession benefits from the group's intimate knowledge of the ideal standards of practice to safeguard the public. Yet it may suffer if the profession's understandable self interest in protecting territory affects the delineation of which functions may or may not be shared with other personnel.

The 1978 study of role delineation in respiratory therapy was based on a "practice profile" of what practitioners actually do in this field, and found no basis for two different entry levels for this profession. The study report recommends that a single, entry-level generalist position be considered for certifying respiratory therapy practitioners.[19] Such action would remove the present distinction between therapists and technicians, who are trained at two different levels. The recommendation does not go so far as to suggest which level of current training, if either, is the appropriate one for the combined occupations.

Careful reading of the differences in the roles assigned to the various levels by role delineation studies reveals that many of the technical tasks assigned to the upper and lower levels are the same. The distinguishing feature of the upper level is usually a supervisory or management role. The need for management skills is the reason hospital administrators most frequently state as they evaluate the possibility of higher levels of education.

If the curriculum of baccalaureate programs in an allied health field differed from associate degree programs in the same field by including management-administrative components, the two program levels might then be related to the world-of-work differences. Yet examination of curriculum content or accreditation standards for technologist versus technician programs, or for "professional" versus "assistant" programs, does not suggest that management and administrative content is the differentiating feature.

In response to the need for management skills, a Texas college has developed a generic allied health baccalaureate program with this emphasis. Students with associate degree level technical preparation for different health occupations move to this common curriculum in the additional two years of education. However, health programs with emphasis on a management and administrative curriculum applicable to the full range of allied health occupations are more usual at the master's than the baccalaureate level. The master's level program usually attracts students with previous work experience and typically is not an entry-level offering. This mirrors the reality that management and supervisory roles are not usually appropriate for college graduates without prior experience in the relevant occupations. Thus management and administrative content may not be the appropriate differentiating feature between entry-level baccalaureate and associate degree programs.

For some four-year allied health programs, the distinguishing feature between baccalaureate versus associate level education is the inclusion of general education courses in the longer preparation. The resulting potential for enrichment and growth to the student pursuing the longer program is obvious. It has long been accepted, and indeed reemphasized in recent times, that the graduate in business administration should view the company balance sheet with a perspective that includes the rest of society. Broadened horizons for health care personnel are of at least equal importance. Unfortunately, allied health education's right to move in the same "liberalizing" direction is hostage to its own prior commitment to vocationalism. The pursuit of the liberalized objective via a baccalaureate rather than a shorter vocational program, however, is not every allied health student's cup of tea. Providing an option for general education to those that want this is a different matter from mandating it for students who prefer the shorter vocational route. Yet, when the ordering of courses requires completion of the general ones before the vocational courses, students may be precluded from choosing the shorter occupational preparation.

As was shown above, associate degree programs in allied health fields, in effect, are inching toward becoming baccalaureate programs when they raise the prerequisite requirements, or if

students with prior college experience gain preferential admission. The dental hygiene programs, which typically lead to an associate degree, are enrolling students who, on the average, have already completed one to two years of college. The additional preparation serves as a screening mechanism in this and other allied health fields to select those students with more maturity and greater potential. Students with a proven track record of previous academic work may be more likely to complete arduous allied health programs. Since demand for admission to many health programs is strong, program directors can accommodate their natural preference toward students with prior preparation. Additionally, there are many students who have already completed degrees in some other discipline and who seek admission to health programs to obtain a saleable skill. Since in today's credentialed world no one wants education that fails to lead to the next degree, this all tends to promote programs at a higher level, regardless of whether the content of such programs differs from that offered at a lower level. Indeed, students working on different degrees often take the same courses. The articulation problem of accommodating the needs of these students without disrupting the typical award at which any given discipline is offered has not received sufficient attention.

The question is sometimes asked whether longer preparation, which tends to raise career and job expectations, might not result in frustrations if graduates work in jobs that do not engage the full breadth of competencies developed in their training. This problem is often raised in connection with nursing, where nurses complain they are not utilized to their full capacities. In a statewide survey of 1977 graduates of Georgia junior and senior colleges, job dissatisfaction levels were no different among baccalaureate and associate degree level graduates of health professions and health technology programs respectively. Nor were the results different for graduates of the health programs as compared to those for all disciplines.[20] Yet, in view of the much lower proportion of health discipline graduates in jobs unrelated to their studies as compared to all graduates, dissatisfaction levels might be expected to have been lower than they were for the health program graduates.

Degrees and "Professionalism"

The desire by health personnel associations to push programs toward higher degree levels is often justified on the basis that a higher degree will enhance the professional stature of the occupation. Higher salaries and greater acceptance of their members as part of the "professional team" are expected to follow. The American Nurses' Association resolution that "professional" registered nurses by 1985 should be at the baccalaureate level equates the baccalaureate degree with professionalism, and the associate degree with technical work. The leadership in cytotechnology states, "It would appear that the baccalaureate degree is the magic key to professional recognition," and "Cytotechnologists should not suffer less esteem than, say, the physical therapists, inhalation therapists or other comparably developing paramedical groups who now require, or soon are to require, a baccalaurate degree in their educational program."[21] The credential is seen as tantamount to professionalism. Ironically, a recent survey of cytotechnologists failed to elicit strong agreement from those in the profession on this parallel. Although there was general agreement that the degree would enhance advancement opportunities, there was less agreement that the baccalaureate would insure professional status or better salaries.

The need to reduce turnover is another reason advanced to justify the cost of longer preparation for allied health and nursing students. There is the hope that persons who have

completed a bachelor's degree will develop a professional attachment to their work to overcome nomadic roaming from job to job, or in or out of the labor force. Little research is available to document whether this is a real outcome. One study in registered nursing found just the opposite: The proportion of registered nurses who were not employed in nursing five years after graduation was higher for those with a baccalaureate than for those with other awards.[22]

Advanced Education in Allied Health and Nursing

Advanced or graduate education in the allied health and nursing fields is an entirely different matter from lengthened preparation at the entry level. Advanced preparation often leads to clinical specialization, teaching, and research — functions which in every discipline require longer preparation than is required for practice.

The explosion of health program offerings has proceeded more rapidly than has the production of advanced degrees for producing faculty in these programs. As a result, the faculty in allied health and nursing programs typically have lower educational preparation than in the older disciplines. For example, only 10 percent of all faculty in collegiate nursing programs in the region hold a doctorate, while 69 percent hold a master's degree. This is an improvement over 1972 when 5 percent and 62 percent held doctoral and master's degrees.*

Surprisingly, for the nation as a whole, there was a decline in the proportion of advanced and teacher training, relative to all allied health programs — from 21 percent in 1974 to 14 percent in 1976. Programs preparing graduates for "practice" at the entry level developed more rapidly during that two-year period than those preparing faculty. Many of the advanced and teacher training programs are fairly new; over one-third were established after 1970. Some advanced programs have probably not yet reached their full potential in producing advanced degrees.

The nursing profession has emphasized the need for nurses with advanced degrees for teaching and research positions. A 1978 survey of collegiate nursing programs in the Southern region netted 243 budgeted vacancies for full-time nursing faculty, or 5 percent of total budgeted positions.[23] At the national level, the percentage of *filled* budgeted nursing faculty positions has risen in recent years. The primary consideration for advanced degrees, insofar as teaching in nursing is concerned, is not the need for more faculty but for faculty with higher degree levels. The nursing profession has also stressed the need for more nurses with advanced preparation in clinical areas, such as geriatrics, mental health, and pediatrics.

The newly emerging field of extra-corporeal circulation technology, which includes renal dialysis and cardiovascular support systems, illustrates the necessity for programs at entry and advanced levels. The Ohio State University program in this new field is at the baccalaureate level. It has produced graduates who, in turn, form the teaching nucleus of programs in other states that are producing the practitioners at the associate degree and certificate levels.

*The regional 10 percent share at the doctoral level for *collegiate* programs exceeds the national 5.3 percent share of total nursing faculty at this level for all nursing programs, including diploma schools. National League for Nursing, *Nursing Data Book*, New York, 1978, p. 58, and Southern Regional Education Board, *Some Statistics on Nursing in the South*, Council on Collegiate Education, Atlanta, 1978, p. 5.

Many of the graduates of the Pharm. D. programs, whose purpose it is to produce clinically oriented pharmacists, are currently taking teaching positions in other newly developing Pharm. D. programs.

The need to produce advanced degrees for faculty for allied health and nursing fields is currently a real one. But it will merit careful monitoring to prevent overextension that could occur when the backlog of faculty demand has been met. Also, concentrating on advanced programs in regional health centers or selected institutions is more likely to produce centers of excellence than would be the case with a proliferation of graduate programs across more and more institutions.

Future Prospects in the Length of Preparation

What are the prospects for further lengthening of the educational preparation for entry into the allied health and nursing occupations? Will the baccalaureate degree become the minimum for most occupations, and the master's award the usual attainment level for many specialties? Major countervailing pressures will determine future outcomes.

The push to lengthen periods of preparation is powerful. The long-term trend in all occupations, not just health, has been toward higher degree levels, toward specialized training that is grafted on top of general training, and toward additional education of workers to promote quality of service. While technology, ever since the beginning of the industrial revolution, has simplified work for many procedures and created routine, repetitive jobs, it has also produced the need for highly trained workers who design and monitor the technology and interpret its results. The general long-term undercurrent of educational upgrading throughout society plays into the hands of professional groups. Raised educational standards for entry into a profession tend to reduce competition when manpower supply becomes more plentiful, as will be the case in future years. The close ties between professional associations and educators in any given field strengthen the ability of both groups to enforce higher educational standards through the accreditation process and licensing and certification requirements.

The strongest current that is operating against lengthening educational preparation in allied health and nursing is the pressure for cost containment. The move to lengthen curriculum or to raise educational standards in the health occupations is coming at a time when both the health industry and the higher educational community are beset with pressures to economize. The expansion of advanced degree level teacher preparation had gained its steam before the current leveling-off of college enrollments, and the concurrent measures to contain governmental expenditures. Today's requests for health programs at higher degree levels, especially for entrance preparation, are met by a different climate. Inclusion of general education in allied health (which tends to lengthen preparation) is certainly of at least the same value as it is in other occupations. However, the tendency to economize is likely to link educational changes to job performance criteria, and the emphasis in this approach is toward competence to do what is necessary, and not necessarily to develop the individual's highest potential.

It should be remembered that the tremendous interest in providing career mobility, often through educational paths, was heightened in an era when there were numerous opportunities for advancement and, indeed, shortages of personnel above the entry level. The influx of thousands of young people into the labor market in the last decade means greater

competition for advancement to managerial and supervisory positions. While the opportunity for career progression needs to be open to all, it will be impossible for everyone to be promoted. In the allied health and nursing fields, many women who entered in the past failed to remain in the labor market. To the extent that their level of retention might improve, generally tighter opportunities for career advancement will affect them too. There will be a need for some to obtain more education, at higher levels, to prepare for specialized roles, for supervisory positions, and for teaching. This need, however, may be selective rather than the norm.

In an era when budget constraints were relatively elastic, there was probably no great incentive to question the length of training as proposed for various educational programs. The need to produce allied health manpower in large numbers, and quickly, probably tempered tendencies to lengthen preparation in the absence of severe financial pressures. An overreaction in a period of extremely tight finances, which could lead to undue restrictions on further education when it *is* needed, will likely be mitigated by the natural response of the professions to restrict entry when the market's demand for large numbers has been satisfied. What is needed at this juncture is a careful case-by-case analysis of program lengths, instead of an unrestricted swing of the pendulum in the opposite direction.

Conclusions

The days when personnel administrators were grateful for "warm bodies" to fill allied health and nursing positions should be coming to an end. A sevenfold increase in the number of graduates from collegiate allied health programs in the region from 1968 through 1976 will produce a considerable change in the labor market situation. Similarly, more than doubling the number of registered nurse graduates in the region in the last six years should alleviate the shortage for this professional group. This recent vast expansion in output of allied health and nursing graduates will be a recurring annual addition to the supply of workers. Even in the absence of accurate data on expected annual openings, it stands to reason that the continuing large supply of health personnel should catch up with past deficits and meet current demands. While new allied health specialties may still develop in the future in response to new technologies or modes of treatment, further indiscriminate proliferation of entry-level allied health and nursing programs in the region may lead to an oversupply of health manpower.

This is not to say that the distribution problem will be solved. Already there are indications of ample supply of health workers in some metropolitan areas, while at the same time rural hospitals are crying for nurses and laboratory and other health specialties personnel. Saturating the market with ever-growing numbers of graduates may not be the most effective solution toward solving the distribution problem.

In the past it was generally accepted that if, and when, some form of national health insurance were enacted, the increased demand for health services would again produce the serious health manpower shortages that occurred when Medicare was instituted. However, the current preoccupation with containment of health costs indicates that a change in the financing of health care, should it be enacted, would be accompanied by strict controls to limit the escalation of expenditures. To the extent that such controls are successful, they would soften the impact on health manpower demand.

The emphasis on cost containment in a society increasingly concerned with the allocation of finite resources has also been spotlighted on higher education. Proposals for new programs and for programs at higher degree levels are encountering greater resistance. The trend toward lengthening the preparation for entry into many allied health fields and in registered nursing, is clashing head-on with the drive for economy.

Public financing of more and longer educational programs to train students for health occupations was promoted in a time of prevalent health manpower shortages. However, as these deficits are removed, the extent of the public's responsibility to finance the education of any student with an interest in a field comes into question. In medicine, some experts now point to oversaturation of professionals as being associated with overutilization of their services, with the effect of raising total health care expenditures. A similar result may occur with the overproduction of allied health manpower, thus further exacerbating the cost containment problem. When respiratory therapists were scarce, for example, some post-operative patients who would have benefited from their services were deprived. As these specialists become plentiful, some patients may be given the service when it is not needed. The line between quality and luxury is a thin one over which present third party reimbursement policy encourages trespassing.

Longer educational preparation has been the norm in many traditional disciplines. Allied health and nursing fields, although emphasizing career preparation in past years, are following paths established by other fields as they pursue academic credentialing, which calls for general education, and higher degree levels for entry into various occupations. Institutional rigidities in the health industry afford the health professions an opportunity to enforce longer preparation and higher degree level as entry requirements more readily than is the case in other fields, where licensing and professional certification play a lesser role. To the extent that longer preparation is clearly tied to performance requirements, the enforcement of longer preparation is a quality control measure to protect the public. But where competence to perform the tasks of various allied health occupations and levels of nursing is not dependent on lengthened preparation and higher degree levels, enforcing such outcomes may restrict supply, raise costs, and thwart the public interest.

For the individual college or university, an interest in maintaining enrollment levels coincides with the desire of some health professions that seek to elevate educational requirements and lengthen training. This mutuality of objectives calls for careful examination of disciplines and programs to identify those for which lengthened education is relevant for competent performance.

Selective revision of programs to advanced levels may be indicated if the goal of these programs is to prepare specialists, administrators, researchers, or educators rather than entry-level personnel. In such cases the need for personnel at *advanced levels,* and the relevancy of the proposed curriculum to these needs, should be fully documented. For *entry preparation,* two types of distinctions are needed when programs are proposed at higher degree levels: the difference in (1) what practitioners do when trained at more than one level, and (2) curriculum content that relates to the demonstrated performance differences. In the absence of such documented distinctions, it is difficult to justify the educational "stretch-out" in the allied health and nursing fields.

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